



## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference USI 02/007	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FR2003/003377	International filing date (day/month/year) 14 novembre 2003 (14.11.2003)	Priority date (day/month/year) 19 novembre 2002 (19.11.2002)
International Patent Classification (IPC) or national classification and IPC C25D 3/22, 15/02, 5/10, 5/26, 5/48, C23C 28/00		
Applicant USINOR		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 12 mai 2004 (12.05.2004)	Date of completion of this report 25 April 2005 (25.04.2005)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR2003/003377

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☒ the international application as originally filed
- ☒ the description:  
 pages \_\_\_\_\_ 1-14 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
 pages \_\_\_\_\_ 1-15 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the drawings:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/FR 03/03377

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement			
Novelty (N)	Claims	1-15	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-15	NO
Industrial applicability (IA)	Claims	1-15	YES
	Claims		NO

### 2. Citations and explanations

1. This report makes reference to the following documents:

- D1: PATENT ABSTRACTS OF JAPAN, Vol. 014, No. 310  
(C-0736), 4 July 1990 (1990-07-04) & JP 02 104689 A  
(KOBE STEEL LTD), 17 April 1990 (1990-04-17)
- D2: PATENT ABSTRACTS OF JAPAN, Vol. 014, No. 497  
(C-0774), 30 October 1990 (1990-10-30) & JP 02  
205699 A (KOBE STEEL LTD), 15 August 1990 (1990-08-  
15)
- D3: PATENT ABSTRACTS OF JAPAN, Vol. 010, No. 318  
(C-381), 29 October 1986 (1986-10-29) & JP 61 127891  
A (NIPPON STEEL CORP), 16 June 1986 (1986-06-16)
- D4: FR-A-1 380 297 (YAWATA IRON & STEEL CO), 27 November  
1964 (1964-11-27)
- D5: US-A-4 425 198 (MARTIN SYLVIA), 10 January 1984  
(1984-01-10)
- D6: EP-A-0 259 657 (NIPPON STEEL CORP), 16 March 1988  
(1988-03-16)

### 2. Novelty

The present application complies with PCT Article 33(1) because the subject matter of claims 1 and 10 meets the requirements of PCT Article 33(2) for novelty.

2.1 Document D1 (abstract) describes a zinc-plated steel plate. The zinc layer contains 0.001-10% by weight (expressed in terms of C) of an acrylamide-based polymer.. The range claimed in the present application appears to fall within the range in document D1. The advantage of a zinc-plated steel plate as described in D1 is the superior adhesion of an organic layer to the top of the zinc layer, dispensing with a pre-treatment. Unlike the present application, the abstract of D1 does not explicitly mention the number of patterns per molecule..

2.2 Document D2 (abstract) describes a zinc-plated steel plate similar to the zinc-plated steel plate in document D1, but having a first zinc layer under the polymer-containing zinc layer.

2.3 Document D3 (abstract) describes a process for zinc-plating a steel plate with a zinc layer containing an acrylamide-based polymer. The electrolyte used for zinc-plating contains zinc ions and 0.001 to 0.1 g/l polyacrylamide with a molecular weight from  $10^6$  to  $10^8$  and a pH from 0.5 to 2. The bath is galvanised with 100 to 450 A/dm<sup>2</sup>. In comparison with the present application, the bath in D3 has a lower polyacrylamide concentration and the molecules comprise a distinctly higher number of patterns.

2.4 Document D4 (examples) describes a process for zinc-plating a steel plate with a polyacrylamide-containing zinc layer. The electrolyte used for zinc-plating contains zinc sulphate and 2-5 g/l polyacrylamide (according to the examples) with an unspecified molecular weight. The bath has a pH from 0.2 to 6.5. The plate is galvanised with 5 to 40 A/dm<sup>2</sup>. In comparison with the present application, the bath in D4 has a higher polyacrylamide concentration

(the number of patterns per molecule is not specified) and the deposition current is weaker.

2.5 Document D5 (examples; claims 1-3; column 4) describes a process for zinc-plating a steel plate with a polyacrylamide-containing zinc layer. The electrolyte used for zinc-plating contains zinc sulphate and 0.001 to 5 g/l polyacrylamide with a number of identical patterns from 2 to  $2 \times 10^6$ . The bath has a pH of 0 to 6.5. The plate is galvanised with about 1 to 64 A/dm<sup>2</sup>. In comparison with the present application, the bath in D5 contains all the elements of claim 1, but they are not explicitly combined in an example. Moreover, polyacrylamide is only used because of its properties as a brightening agent.

2.6 Document D6 (page 4, lines 31-34; page 5, lines 39-47) describes the effect of additives such as polyacrylamides as brightening agents and as agents that enhance the adhesion of additional layers. It does not describe the molecular weight of the polyacrylamide used.

### 3. Inventive step

The present application does not comply with PCT Article 33(1) because the subject matter of claims 1 and 10 does not involve an inventive step (PCT Article 33(3)).

3.1 Document D1, which is considered to represent the prior art closest to the subject matter of claim 1, describes a zinc-plated steel plate whose zinc layer contains 0.001-10% by weight (expressed in terms of C) of an acrylamide-based polymer. The range claimed in the present application appears to fall within the range in document D1. The advantage of a zinc-plated steel plate as described in D1 is the superior adhesion of an organic

layer to the top of the zinc layer, dispensing with a pre-treatment.

Consequently, the subject matter of claim 1 differs from that known plate in that the number of patterns per molecule is explicitly indicated and ranges from 6 to 150.

The present invention can therefore be considered to address the problem of determining the size of an acrylamide-based polymer which achieves adequate adhesion.

The solution proposed in claim 1 of the present application is not considered inventive (PCT Article 33(3)) for the following reasons: optimising a single known parameter to solve the problem in question is a normal measure for a person skilled in the art.

3.2 Document D4, which is considered to represent the prior art closest to the subject matter of claim 1, describes a process for zinc-plating a steel plate in which the zinc layer contains a polyacrylamide. The deposited layer has the advantage of being easy to paint. The electrolyte used for zinc-plating contains zinc sulphate and 2 to 5 g/l polyacrylamide (according to the examples) with an unspecified molecular weight. The bath has a pH from 0.2 to 6.5. The plate is galvanised with a current from 5 to 40 A/dm<sup>2</sup>.

The subject matter of claim 10 differs from that known zinc-plating bath in that the bath has a lower polyacrylamide concentration (D4 does not explicitly mention the number of patterns per molecule) and in that the deposition current is stronger.

The present invention can therefore be considered to

address the problem of finding which bath and galvanisation conditions produce a deposit as per claim 1.

The solution proposed in claim 10 of the present application is not considered inventive (PCT Article 33(3)) for the following reasons: optimising a known bath and known deposition parameters in order to solve the problem in question is a normal measure for a person skilled in the art, especially since these parameters remain within already tested ranges (D5, columns 4-6).